Instruction Manual

KORG-800 4-TRACK MIDI SEQUENCER

FOR COMMODORE 64

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INTRODUCTION

The KORG-800 FOUR TRACK MIDI SEQUENCER software is the vanguard of an exciting new phase in the evolution of synthesizers; now the sound and performance features of commercial synthesizers and electronic keyboards can be combined with the speed and power of the microcomputer.

This program is easy to learn, fast to use, and what it does sounds simple; it will memorize every aspect of a musical performance, store it, and play it back. It can also be used in more sophisticated and subtle ways.

FEATURES

- Powerful. Up to sixteen keyboards and a drum machine can be chained together in one MIDI system. Separate tracks can control separate keyboards, or the same track can control several keyboards. And of course, the sequencer doesn't hamper your ability to play the keyboard "live".

- KORG-800 Sequencer tracks are enormous; your sequences can be over six thousand notes long. Easy-to-use looping means you can lay down rhythm tracks and have them repeat in perfect sync while you solo over the top.

- Pitch benders, modulation wheels, breath controllers, foot pedals, keyboard velocity, after-touch, presets; all control changes are stored and played back exactly as you used them.

- Track Mixing. As the name implies the KORG-800 is, in its simplest form, a 4-track polyphonic sequencer. However, the MIX feature allows you to combine sequences and continue over-dubbing new tracks. As a result, finished sequencer files can contain literally dozens of sequencer tracks.

- The KORG-800 Sequencer can be synchronized with external drum machines, sequencers, and even "sync tracks" on tape recorders. In addition, other external sequencers can be triggered from within tracks recorded on the KORG-800, for maximum versatility.

HARDWARE REQUIREMENTS

This version of the KORG-800 MIDI Sequencer Software requires the following hardware in order to operate:

- One Commodore 64 computer, video monitor (or TV), and one disk drive.

- One Korg, Passport Designs, or Yamaha "MH01-C" MIDI interface cartridge for the Commodore, with three 5-pin DIN connecting cables.

- One or more MIDI-equipped synthesizer(s).

- Amplifier, headphones, or other audio monitoring system.

- OPTIONAL - Programmable drum machine(s).

- OPTIONAL - MIDI Drum Sync Cable Kit.

DATA STORAGE DISKS

Before using the KORG-800 MIDI Sequencer, you will need to prepare at least one blank disk to store your sequencer data files on. A blank disk must be "initialized" (or "formatted") before it can be used for data storage.

Instructions for data disk formatting are described in detail in the Commodore Disk Drive Owner's Manual. However, an easier way to format data disks is to turn your system on, place a blank disk in the drive, then type in the following BASIC program:

```
10  OPEN 15, 8, 15, "N:diskname,id"
20  CLOSE 15
RUN
```

"diskname" is whatever name you choose to give the disk;
"id" is a two-letter identifier you also determine.

INSTALLATION

The first step is to install the "MH01-C" MIDI Interface Cartridge in your computer. With the power off (pulling the plug is even better), insert the MIDI Interface Cartridge label side up into the expansion slot of your Commodore 64. It can only fit one way. (When you are facing the keyboard side of your computer, the expansion slot is on the right rear corner.)

The next step is to connect the cables between your synthesizer and the Commodore Interface Cartridge (see diagrams on p.7):

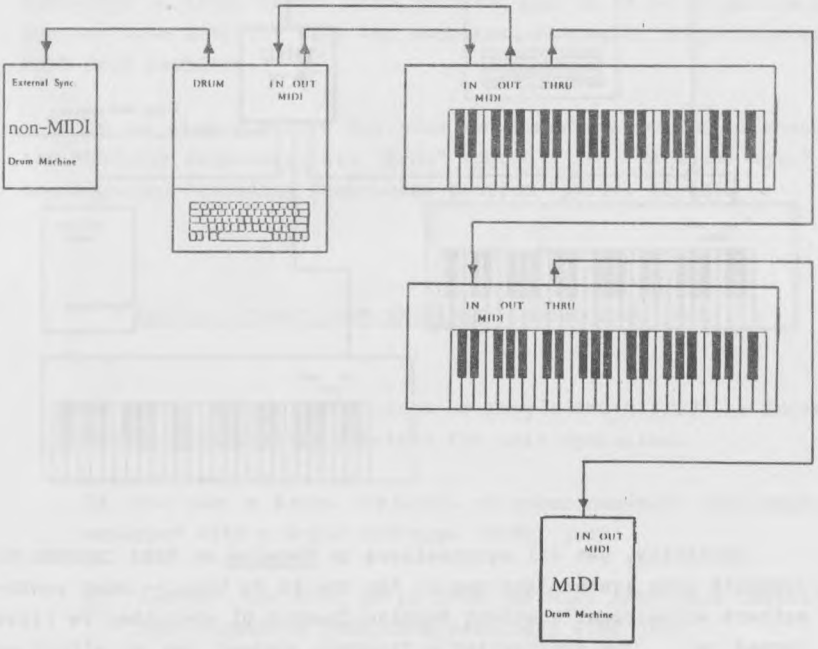
- Connect the Computer MIDI OUT to Synthesizer MIDI IN, using one of the supplied MIDI cables.

- Connect the Synthesizer MIDI OUT to the Computer MIDI IN.

If you are using multiple keyboards or other devices in your MIDI system, only one synthesizer is connected directly to the computer.

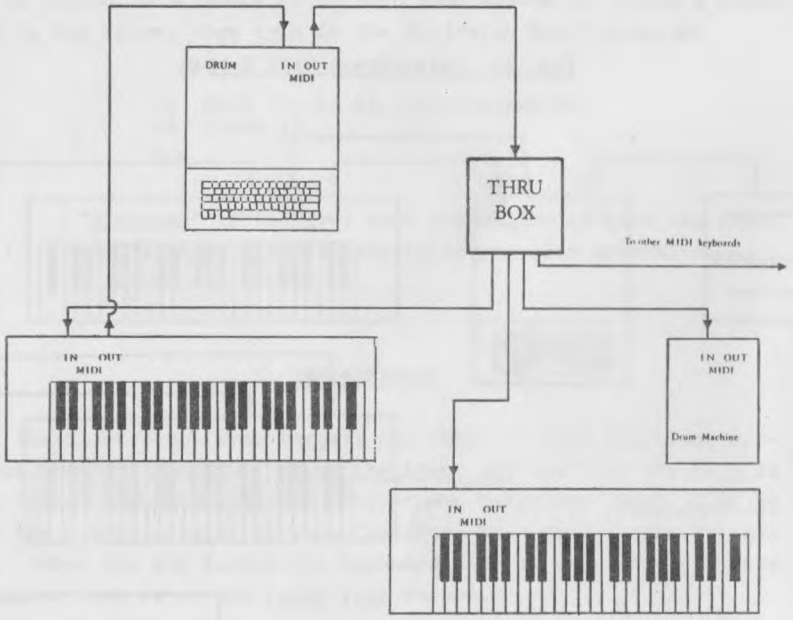
Up to three additional keyboards can be tied into the system via cables from MIDI THRU on one instrument (if so equipped) to MIDI IN on the next keyboard in the system, and so forth. This method is known as a "daisy-chain". (See Figure "A")

Fig. A: Daisy-chain MIDI System



If you are using more than four instruments in your system, or your instruments do not have MIDI THRU jacks, use a "MIDI THRU BOX" such as the KORG KMT-60 to interconnect your instruments in a "star network" as per Figure "B".

Fig. B: Star Network MIDI System



Initially, set all synthesizers to Receive on MIDI CHANNEL 01 (consult your synthesizer manual for how to do this -- most synthesizers automatically select Receive Channel 01 when they're first turned on). The synthesizer's Transmit channel has no effect on the KORG-800's operation.

Remember that in multiple synthesizer setups, the synthesizer connected directly to the computer MIDI IN is your recording keyboard. All other instruments are playback-only.

CONNECTING DRUM MACHINES (OPTIONAL)

Korg's DDM-100, DDM-200, and KPR-77, plus most other programmable drum machines, can easily be connected to the KORG-800 Sequencer, for perfectly synced performances. This can be accomplished via SYNC, START/STOP and CLOCK, or MIDI connectors on your drum machine.

With a drum machine connected, your KORG-800 generates the START/STOP and CLOCK signals for the drum machine to operate. The KORG-800's SYNC Clock rate can be set to 48 or 24 pulses per quarter note directly from the computer, making it compatible with most drum machines.

It is also possible for your drum machine itself to control the KORG-800 Sequencer; see "Sync" (pg.23), and "External Sync" in the Advanced Recording Techniques section (pg.37, 40-42).

KORG or ROLAND DRUM MACHINES (using SYNC jack)

The use of a Sync Cable (such as Korg's SMC-015/030 or SMC-set Sync/MIDI cables) is required for this operation.

If you use a Korg, Roland, or other non-MIDI drum machine equipped with a 5-pin DIN-type "SYNC" jack:

1) Connect the SYNC cable from the MIDI Interface Cartridge DRUM output to your drum machine's SYNC jack.

2) Set the drum machine's "SYNC INT/EXT" switch to EXTERNAL.

DRUM MACHINES USING "START/STOP" AND "CLOCK" JACKS

If you are using a Linn, Oberheim, Drumulator, or other non-MIDI drum machine without a DIN-type "SYNC" connector, you must use the Korg/Passport "DCK-1" Drum SYNC Cable Kit for proper operation.

1. Connect the male-to-male DIN cable to the DRUM output of the MIDI Interface Cartridge.

2. Attach the female DIN "Y" cord to the male DIN cable.

3. Insert the straight phone plug into the drum machine's CLOCK input, and the right angle phone plug into the drum machine's START/STOP (or FOOTSWITCH) input.

(NOTE: The KORG-800 normally generates a 48 pulse per quarter note sync signal, for proper operation with Korg and Linn drum machines. This can easily be changed to a 24 pulse per quarter note signal, for use with Roland and Drumulator machines. Refer to the FORMAT Screen "DRUM" setting, pg.22.)

(ALSO NOTE: If you're mixing different types of SYNC and MIDI devices, the KORG KMS-30 MIDI SYNCHRONIZER device will resolve any incompatibility problems, and additionally provide a SYNC-TO-TAPE function.)

MIDI-EQUIPPED DRUM MACHINES

Drum machines equipped with MIDI interface jacks are connected to the KORG-800 just like other MIDI synthesizers, via the Commodore's MIDI "OUT", a synthesizer's MIDI "THRU", or by using the KORG KMT-60 MIDI THRU BOX. (See diagrams on p.7 & 8)

(NOTE: The KORG-800's External Sequencer Triggering function will also affect drum machines connected via a computer's MIDI OUT as well; the EDIT SECTION's "Trigger" function should be set to the "ON" status for proper operation. See pg.37 for further details.)

CONNECTING METRONOME AMPLIFIER (OPTIONAL)

This program can generate an audible metronome pulse during recording, which can be heard through a regular TV or monitor equipped with a built-in speaker. If your monitor has no speaker, or you need additional volume, simply connect the Commodore accessory AUDIO/VIDEO cable marked "AUDIO OUT" to an external amplifier.

GETTING STARTED

To begin using the KORG-800 Sequencer program:

1 Make sure you have prepared a formatted disk (pg.6)

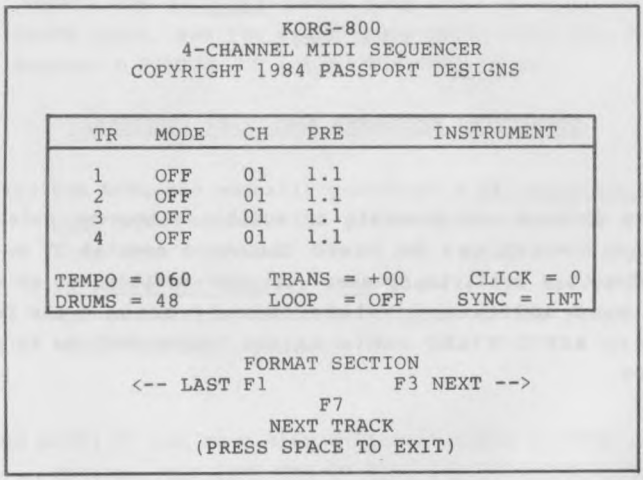
2 Make sure all connections are correct (pg.6-8)

3 Turn on your video monitor, disk drive, and computer.

4 When the BASIC prompt appears place the KORG-800 program disk in your disk drive and type the following command: LOAD "*",8 and press <RETURN>

5 When the program has finished loading and the READY prompt returns, press <READY> If you wish to skip the "boot" screen, press <SPACE BAR> In a few seconds you're looking at the FORMAT screen:

FORMAT SCREEN


KORG-800
4-CHANNEL MIDI SEQUENCER
COPYRIGHT 1984 PASSPORT DESIGNS
TR MODE CH PRE INSTRUMENT
1 OFF 01 1.1
2 OFF 01 1.1
3 OFF 01 1.1
4 OFF 01 1.1
TEMPO = 060 TRANS = +00 CLICK = 0
DRUMS = 48 LOOP = OFF SYNC = INT
FORMAT SECTION
<-- LAST F1 F3 NEXT -->
F7
NEXT TRACK
(PRESS SPACE TO EXIT)

6 Remove the program disk from your disk drive and insert a formatted data disk.

7 Turn on all the synthesizers in your MIDI system.

STEP-BY-STEP KORG-800

Beginning on pg.17, we'll conduct a thorough exploration of the FORMAT screen. However, for those of you who can't wait, here is a quick "step-by-step" guide to KORG-800.

I. To Record a Single Track

	DISPLAY	YOU TYPE	EXPLANATION
1	Format screen.	Press <R>	Set Track 1 MODE to record.
2		Press <SPACE>	To exit Format screen.
	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY		You are now ready to begin recording.
3		Press <SPACE>	To begin recording.
4	RECORDER IS ON	Play keyboard.	Whatever you play on the keyboard is recorded exactly as you play it.
5	RECORDER IS ON	Press <SPACE>	To stop recording and return to Format screen.
6	Format screen.	Press <P>	Set Track 1 MODE to playback.
7		Press <SPACE>	To exit Format screen.
	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY		You are now ready to begin playback.
8		Press <SPACE>	To playback recorded sequence.

NOTE: You can play the keyboard "live" along with the sequence.

II. Overdub Recording

	DISPLAY	YOU TYPE	EXPLANATION
1	Format screen.	Press <R>	Set Track 1 MODE to record.
2		Press <SPACE>	To exit Format screen.
3	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY	Press <SPACE>	To begin recording Track 1.
4		Play music on keyboard.	
5	RECORDER IS ON	Press <SPACE>	To end recording and return to Format screen.
6	Format screen.	Press <F7>	To switch to Track 2.
7		Press <R>	Set Track 2 MODE to record. Track 1 MODE is automatically switched to playback.
8		Press <SPACE>	To exit Format screen.
9	DISK/EDIT/FORMAT PRESS <SPACE> TO REOCRD / PLAY	Press <SPACE>	To begin recording Track 2. Track 1 plays back in sync.
10		Play music on keyboard.	
11	RECORDER IS ON	Press <SPACE>	To end recording on Track 2 and return to Format screen.
12	Format screen.	Press <P>	Set Track 2 MODE to playback.
13		Press <SPACE>	To exit Format screen.
14	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY	Press <SPACE>	To playback both recorded sequencer tracks.

NOTE: If, after experimenting with OVERDUB recording, you wish to try SINGLE TRACK LOOP RECORDING (next page), you must first turn Track 2 OFF (see pg.18).

III. Single Track LOOP Recording

	DISPLAY	YOU TYPE	EXPLANATION
1	Format screen.	Press <R>	Set Track 1 MODE to record.
2		Press <F3> eight times	To move cursor onto LOOP.
3	LOOP=OFF	Press <RETURN>	To switch LOOP=ON.
4		Press <SPACE>	To exit Format screen.
	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY		You are now ready to begin recording.
5		Press <SPACE>	To begin recording.
6		Play keyboard.	Whatever you play on the keyboard is recorded exactly as you play it.
7	RECORDER IS ON	Press <SPACE>	To stop recording and return to Format screen.
8	Format screen.	Press <F3>	Move cursor to Track 1 MODE.
9		Press <P>	Set Track 1 MODE to playback.
10		Press <SPACE>	To exit Format screen.
	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY		You are now ready to begin playback.
11		Press <SPACE>	To playback recorded sequence.

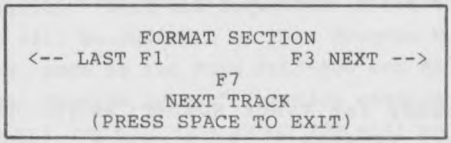
NOTE: The music you have just recorded will continue to repeat until you press the <SPACE BAR> again.

IV. Overdub with LOOP

	DISPLAY	YOU TYPE	EXPLANATION
1	Format screen.	Press <R>	Set Track 1 MODE to record.
2		Press <F3> eight times	To move cursor onto LOOP.
3	LOOP=OFF	Press <RETURN>	To switch LOOP=ON.
4		Press <SPACE>	To exit Format screen.
5	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY	Press <SPACE>	To begin recording Track 1.
6		Play music on keyboard.	
7	RECORDER IS ON	Press <SPACE>	To end recording and return to Format screen.
8 9 10	Format screen.	Press <F3> Press <F7> Press <R>	Move cursor to Track 1 MODE. To switch to Track 2. Set Track 2 MODE to record. Track 1 MODE is automatically switched to playback.
11		Press <SPACE>	To exit Format screen.
12	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY	Press <SPACE>	To begin recording Track 2. Track 1 plays back in sync.
13		Play music on keyboard.	Track 1 is the master track. Track 2 cannot be longer than Track 1.
14	RECORDER IS ON	Press <SPACE>	To end recording on Track 2 and return to Format screen.
15 16	Format screen.	Press <P> Press <SPACE>	Set Track 2 MODE to playback. To exit Format screen.
17	DISK/EDIT/FORMAT PRESS <SPACE> TO RECORD / PLAY	Press <SPACE>	To playback both recorded sequencer tracks.

FORMAT SCREEN IN DEPTH

The information displayed on the Format screen tells you a great deal about how your system will behave, so we'll spend some time exploring it. But first, look at the bottom third of the screen:



This is your COMMAND area. When working with KORG-800 you'll always see a prompt here telling you what you're doing, and a list of the currently-valid command keys.

Right now you're in the FORMAT part of the program, where you determine how your instruments and tracks are hooked together, and how the click track will behave during recording. If you look at the middle third of the screen, you'll find a flashing [>] cursor. When the cursor points to an item, the item is changeable. Your currently-valid command keys are:

<F3> (FUNCTION 3 key) This moves the cursor through MODE, CH, PRE, INSTRUMENT, then to the bottom of the screen and TEMPO, TRANS, CLICK, DRUMS, LOOP, and SYNC.

<F1> (FUNCTION 1 key) This moves the cursor in the opposite direction.

<F7> (FUNCTION 7 key) Selects which of the four tracks you're working with. TEMPO, TRANS, CLICK, DRUMS, LOOP and SYNC are common to all tracks.

<SPACE> After you've changed everything you wish to change on this screen, press the SPACE BAR to move on.

Now that you know how to move about on the screen, direct your attention to the line:

TR	MODE	CH	PRE	INSTRUMENT

These are the headings for the five columns on the screen.

TR

TR stands for TRACK Number; as you can see there are four TRACKs, labeled 1, 2, 3, and 4. Specific information for each TRACK is listed on the same line as the TRACK number.

MODE

MODE stands for TRACK MODE. A TRACK can be in either RECORD, PLAYBACK, or OFF MODE. To select the MODE, move the cursor to this area and press <R> for Record <P> for Playback or <O> for Off. Only one track can be in Record at a time.

CH

CH stands for MIDI Output CHANNEL. This is only of concern if you have several MIDI-equipped instruments and you wish to direct separate sequencer tracks to separate synthesizers. If you have just one instrument in your system leave all CHANNELs set to 1.

If you've several instruments connected together in your MIDI system, use CHANNEL to select which instruments are connected to each track. Valid CHANNEL numbers are 1 through 16.

At the same time, to be able to hear the track played back, you must set the CHANNEL number of a synthesizer to match the CHANNEL number of the track. Consult the synthesizer owner's manual for instructions on changing its MIDI INPUT (Receive) CHANNEL. (A synthesizer's OUTPUT or Transmit CHANNEL has no effect on the KORG-800 Sequencer since any track can have its playback channel changed, as per above.)

PRE

This is a remote control for the PRESET (Program Number) on your synthesizer. When the sequencer is set to playback, the synthesizer will be switched to this Program Number. (Certain synthesizers, such as the Korg POLY-800 and EX-800, must have the "External Program Select" function enabled from the front or rear panel before the KORG-800 will be able to change their programs automatically; refer to your synthesizer manual for details.)

Valid PRESET numbers are 1.1 through 8.8, where the first digit is the bank number and the second digit is the program number. PRESET can be entered either by selecting a Program Number on the synthesizer´s control panel or by typing in the number on the computer.

There are four things to be aware of when changing PRESET:

First: Just because you can enter 8.8 here doesn´t mean all other synthesizers in your system will automatically select program "88". Korg synthesizers, as well as several other brand synthesizers, use a "base 8" numbering system for program selection. That means numbers 1 through 8 (only) are used to select any one of 64 (or 128) programs. Certain other synthesizers, however, use "base 10" numbers in which all digits (including "9" and "0") are used for program numbers. If your synthesizer uses base 10, see the following chart for KORG-800 program preset equivalents.

BASE 8 / BASE 10 CONVERSION TABLE

KORG 800	base 10	KORG 800	base 10	KORG 800	base 10	KORG 800	base 10
1.1	01	3.1	17	5.1	33	7.1	49
1.2	02	3.2	18	5.2	34	7.2	50
1.3	03	3.3	19	5.3	35	7.3	51
1.4	04	3.4	20	5.4	36	7.4	52
1.5	05	3.5	21	5.5	37	7.5	53
1.6	06	3.6	22	5.6	38	7.6	54
1.7	07	3.7	23	5.7	39	7.7	55
1.8	08	3.8	24	5.8	40	7.8	56
2.1	09	4.1	25	6.1	41	8.1	57
2.2	10	4.2	26	6.2	42	8.2	58
2.3	11	4.3	27	6.3	43	8.3	59
2.4	12	4.4	28	6.4	44	8.4	60
2.5	13	4.5	29	6.5	45	8.5	61
2.6	14	4.6	30	6.6	46	8.6	62
2.7	15	4.7	31	6.7	47	8.7	63
2.8	16	4.8	32	6.8	48	8.8	64

Second: If two or more tracks are set to the same Channel, then the preset with the lowest-numbered track has priority. If two tracks have been merged into one track, the target track preset has priority.

Third: Remember, this is the starting PRESET for this track. If you punched in a preset change on your instrument while recording, that preset change is saved, too. The instrument will automatically make the preset change every time you play the track back -- even if you change the starting PRESET!

Fourth: Some instruments use unusual codes to indicate presets, such as a letter for the memory bank and a number for the preset's position within the bank. In these cases the PRESET number on screen will appear to be different from the preset number on the synthesizer, as the screen shows the base 8 equivalent for the PRESET, and not the synthesizer's internal code.

Don't worry. Everything will still work correctly.

INSTRUMENT

Every sequence you record and save can have a different Track/Channel configuration. In a multiple-synthesizer setup this can make remembering which track goes to what INSTRUMENT a little difficult, so we've provided this space to help you remember. Type in a name (12 letters max.) and <RETURN>.

You can use this space to identify the instrument connected to this CHANNEL (i.e., KORG POLY-61, POLY-800, EX-800, etc.) or the sound (i.e., VIOLIN, FLUTE, etc.). It's there for your reference. Please note, though, this is just a name. It does not affect the CHANNEL setting; you must correctly set that yourself.

To change a name, simple type the new name over the old name (you may have to type extra spaces at the end of the new name), and press <RETURN>.

To clear this space, type a single character (any character), press <DEL> once, and then enter enough spaces to clear out remaining characters.

Below the specific track information, you'll find six items common to all tracks. They are:

TEMPO

This is the TEMPO for recording and playback speed, and for the metronome (click track) you'll hear during recording. It is entered in beats-per-minute. The valid range is from 32 to 159.

Type in a number and use the FUNCTION keys to move on. If the number is outside the legal range, you won't be allowed to move until you fix it.

In playback, use the <+> or <-> keys to change TEMPO in real time.

TRANS

TRANS stands for TRANSPOSITION; after a sequence has been recorded you may TRANSPOSE it into another key. This makes it possible to record in a key that's comfortable to play in and play back in the key you want to hear it in.

The valid range is up or down 12 half steps (one octave). To TRANSPOSE, type in either a <+> (for up) or a <-> (for down) followed by a number from 1 to 12. If you enter a number without a plus or minus, KORG-800 will TRANSPOSE up.

CLICK

Click indicates the number of beats per measure (e.g. <4> for $^{4}4$ time, <3> for $^{3}4$ time, etc.). It is used to set the measure readout correctly, and also allows the Metronome to "count off" a measure before recording begins.

The allowable range here is 0 through 9. If Click is set to "0", the metronome is off.

DRUMS

The KORG-800 Sequencer allows external drum machines to be synced to the system. This can be done either through MIDI (see pg.9-11, 40-42), or through the DRUM jack on the MIDI Interface Cartridge and the drum machine's "SYNC" or "START/STOP" and "CLOCK" inputs (if so equipped).

The KORG-800 "defaults" to a 48 pulse per quarter note SYNC signal, which is compatible with Korg drum machines. For drum machines with a 24 pulse per quarter note rate, move the cursor to this parameter and hit <RETURN> to change the Clock Rate to 24.

(NOTE: This parameter only affects the signal coming out the Interface Cartridge's DRUM jack. Drum machines interfaced via the computer's MIDI OUT jack are not affected.)

LOOP

The sequencer can operate in two distinctly different modes. In LOOP OFF mode, the sequence will play back once, and stop. In LOOP ON mode, the sequence plays through to the end, then restarts from the beginning without a break, and continues to repeat until you manually shut it off (by pressing <SPACE>).

LOOP is switched ON or OFF by moving the cursor to this area and pressing <RETURN>. You must turn the LOOP ON before you record tracks which are to be LOOPed; you cannot lay down a track and then decide to make it a LOOP.

Always record Track 1 first. Track 1 is the master track for LOOPing, and is always the longest track in the loop.

SYNC

With this unique and powerful feature, the KORG-800's operation can be controlled by external devices, such as drum machines, sequencers, and even tape "sync" tracks, instead of using the KORG-800 internal clock (or timing generator).

(NOTE: Use of this features requires that:

a) the external clock is a MIDI 24-pulse/qtr.note clock and,

b) the MIDI clock is connected to the Interface Cartridge MIDI "IN" connector.)

If you are using a drum machine equipped with a 5-pin DIN socket for external sync (i.e. Korg DDM-110, DDM-220, KPR-77, or other non-MIDI drum machine, the KORG KMS-30 MIDI SYNCHRONIZER will convert the sync clock to MIDI clock, as well as perform sync-to-tape functions.

The sync mode is selected by moving the cursor to this area and pressing <RETURN>.

"INT" means the KORG-800 (and everything else connected to its MIDI OUT jack) is controlled by the KORG-800´s internal clock;

"EXT" means the KORG-800 (and everything else connected to its MIDI OUT jack) is controlled by the external clock source connected to the interface cartridge´s MIDI IN jack.

The most common usage of this feature is to allow your entire MIDI system to be synced to a "Sync Track" on a multi-track tape recorder, using the Korg KMS-30 MIDI Synchronizer. By doing this, you not only free up valuable audio tracks for your vocals and other acoustic instruments, but you also don´t ever have to record your sythesizers or drum machines until your final mixdown. This makes for better sound and easier recording.

EXITING THE FORMAT SCREEN

After you've made all the changes you wish to make, press the <SPACE BAR>. The command area changes to:

```
bytes used: nnnnn
bytes left: nnnnn
beat clock: nnn.n.nn

DISK / EDIT / FORMAT

PRESS SPACE TO RECORD/PLAY
```

The bytes used and bytes left numbers tell you how much memory you are using in your sequence. During recording, you will see these numbers change every time you record anything.

The beat clock tells you where you are in your sequence. The actual numbers mean:

```
nnn      .     n      .     nn
measure number   beat     beat subdivisions
```

Now, you may press:

<D> To go to the Disk Functions screen, where you save and load sequencer files. (See pg.43)

<F> To go back to Format. (The screen we just came from.)

<E> To EDIT tracks. (See pg.33)

Or you can start recording with your new sequencer. Turn to the next page.

RECORDING YOUR FIRST TRACK

To record a non-looped track:

1) On the Format screen, use the cursor keys to select TRACK 1, and press <R> to set the MODE to RECORD.
2) Move the cursor down to TEMPO and enter the TEMPO number you wish to record at.
3) Move the cursor to CLICK and enter the number of beats in one measure. (For $^{4}4$ Rock enter <4>, for $^{3}4$ Waltz enter <3>, etc.)
4) If you have connected a drum machine to the computer's DRUM output jack, set the SYNC rate to the particular drum machine's clock rate (24 or 48 pulse/qtr.note).
5) Select SYNC mode to control tempo either by the internal KORG-800 clock, or by an external MIDI clock.
6) Press the <SPACE BAR>. The following prompt will appear in the Command area:

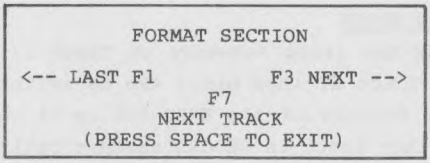
PRESS SPACE TO RECORD/PLAY

TO START: All you do is press the <SPACE BAR>! If you have set CLICK to any number except 0, the metronome will count off that number of beats before recording starts.

When the message RECORDER IS ON flashes on the screen, you may start playing. The sequencer is in gear and recording everything you do, including preset changes, pitch bends, key velocity, and all other controllers.

How long can you play? It's hard to give an absolute answer to that question; track length depends on how fast and how polyphonic you play, how you use pitch bend and other manual controls, whether the keyboard is velocity-sensitive... The sequencer has a total capacity of about 40 kilobytes, which we conservatively estimate allows you to record 6,000 notes, divided between the tracks as you see fit. (You may be able to record more.)

TO STOP: When you've recorded all you wish to record, press the <SPACE BAR> to stop! You'll return to the Format screen:



PLAYBACK

1) Move the cursor to Track 1 MODE and press <P> to switch the track to PLAYBACK.
2) Press <SPACE BAR> to exit the Format Screen and return to the Sequencer.
3) Press <SPACE BAR> to start the sequencer playing back.

Simple and beautiful, isn't it? Another nice feature is that you can play your synthesizer "live" over the sequence, and you can use any of the synthesizer's controls to change the sound.

While the sequencer is "playing back", you have four commands that affect playback:

<+> ("Plus" key) Speed up sequencer playback tempo.

<-> ("Minus" key) Slow down sequencer playback tempo.

<RUN/STOP> (Pause) Stop and "hold" the sequence at any chosen point. To resume playback from the point at which you paused, press any key.

<SPACE> Stop playback and return to Format Sceen. Press <SPACE BAR> twice to re-start from the beginning.

(NOTE: When the KORG-800 is synced to an external clock, or when external sequencers are being triggered by the KORG 800, the PAUSE function may not function properly.)

Experiment with these controls, until you become comfortable with them. When you're confident about what they do, and you've listened to your first sequence enough, press <SPACE BAR> to return to the Format Screen.

OVERDUBBING A SECOND TRACK

After recording the first sequence on Track 1, press <F7> to move the cursor to Track 2, then press <R> to switch it to RECORD MODE. A convenient feature of the KORG-800 is if one track is in RECORD, putting another track in RECORD automatically switches the first track to play. You cannot have two tracks in RECORD at the same time.

Unlike a tape recorder there is no difference between normal playback and sync playback; the four tracks of the sequencer are always synchronized. Remember though, when you have more than one track running one synthesizer, the lowest-number track's PRESET NUMBER is in control.

Also remember, CHANNEL refers to the MIDI OUTPUT CHANNEL, and has nothing to do with sequencer tracks. If you're running several tracks through one synthesizer, be sure all tracks going to the same synthesizer are set to the same CHANNEL.

You may also change TEMPO, CLICK, or SYNC between recording tracks, but not LOOP.

After switch Track 2 MODE to RECORD, and making any other legal changes in Format, press <SPACEBAR> to return to the prompt:

PRESS SPACE TO RECORD/PLAY

Then press <SPACE BAR> to begin recording the next track.

As before, if you've selected CLICK the metronome will count off one measure before recording begins, and then you'll hear your first track being played back. You may begin playing your second track at any time after the first track has begun, and the second track may be longer or shorter than the first track. Press the <SPACE BAR> when you've finished, move the cursor to Track 2 MODE (if necessary), and press <P> to set Track 2's MODE to PLAYBACK.

PLAYBACK OF OVERDUBBED MATERIAL

Playback of overdubbed tracks is identical to playback of a single track. With all tracks set to PLAYBACK (or OFF) MODE press <SPACE BAR> once to exit the Format screen, and press <SPACE BAR> again to start PLAYBACK.

OVERDUBBING THIRD AND FOURTH TRACKS

The process of adding third and fourth tracks is identical to overdubbing the second track. There is one thing to be aware of, though. Some MIDI instruments have as few as five voices; if all tracks are running to the same synthesizer, you stand a very good chance of running out of voices before you run out of tracks!

If this happens, you'll notice parts dropping out of the earliest-recorded tracks while you're overdubbing, as the keyboard always has priority over the sequencer. This does not harm the recorded tracks. The data is still there; there's just no voice available to play it. Short of buying another MIDI keyboard, there's no cure for this condition.

RECORDING A LOOPED TRACK

A LOOPED Track is a track that is tied back to its beginning. In PLAYBACK MODE a LOOPED Track will play through to the end and then, without pausing, return to its beginning and start playing back all over again. LOOPED Tracks will continue repeating themselves until manually shut off by pressing <SPACE BAR>.

To record a LOOPED Track:

1) If you have been experimenting with the sequencer, you will need to turn off the old tracks. Move the cursor onto every track's MODE and press <o> ("o", not "zero"!) to turn the tracks OFF.
2) Move the cursor to Track 1's MODE and press <R> to place Track 1 in RECORD MODE.
3) Move the cursor onto LOOP and press <RETURN> to switch LOOP to ON.
4) Set TEMPO, CLICK, DRUMS, and SYNC as desired.
5) Press <SPACE BAR> to exit the Format screen. The prompt in the Command area is:

PRESS SPACE TO RECORD/PLAY

6) Start the sequencer by pressing the <SPACE BAR>. As before, if you selected CLICK you'll hear the selected number of beats before the sequencer starts RECORDING.

There are two ways loop recording differs from ordinary recording. First, the sequencer loops back to the first note recorded. This means if you begin a looped track with leading rests, the rests are ignored when the track loops. So you will usually want to record the first note of the track on the downbeat of the first measure in the loop.

The other difference comes when you stop recording. The last note played is never heard; it's a "non-part" note defining the end of the track.

But that last note played also marks where the "splice" takes place! To get a rhythmically accurate loop, you must play the "non-part" note on the downbeat of the next measure.

In other words, if you want your loop to sound like this:

Play this:

(Your loops may be longer, of course.) A looped track, once recorded, may be played back with LOOP ON or OFF.

NOTE: All notated music examples used in this manual were developed and printed using PolyWriter Transcription and Score Printing software.

OVERDUBBING ON LOOPS

To record a second track in LOOP mode:

1) Move the cursor to Track 2's MODE and press <R> to switch Track 2 MODE to RECORD. This will automatically switch Track 1 to PLAYBACK MODE.
2) You may change TEMPO, CLICK, PRESET, or SYNC between recording the first and second tracks, but not LOOP. When you have made whatever changes you wish in Format, press **<SPACE BAR>** to exit the Format screen.

The prompt reads:

PRESS SPACE TO RECORD/PLAY

Press the <SPACE BAR> to begin recording the next track.

As before, if you've selected CLICK the metronome will count off a few beats before recording begins, and then you'll hear your first track being played back. You may begin playing your second track at any time. There are a couple of very important howevers, though:

- Additional tracks cannot be longer than the first track in a loop. The first track is the master track, and loop timing is based on it.

- Additional tracks must not begin before the first track.

- You cannot be holding down any keys on the keyboard when the first track ends. In LOOP recording, the sequencer ignores anything you do after the end of the first track, including taking your fingers off the keys! If you are holding keys down when the first track ends then as far as the sequencer is concerned you're still holding them down, and they will sustain indefinitely.

3) After you have played through to the end of the track, press <SPACE BAR> to return to the Format screen, and set the track you've just recorded to PLAYBACK MODE.

ADVANCED RECORDING TECHNIQUES

Once you're comfortable with the basic procedure of laying down and overdubbing sequence tracks, you may begin to investigate some of the more sophisticated features of the KORG-800.

From the DISK / EDIT / FORMAT menu, select <E> (for EDIT).

The command area will change to read:

```
        EDIT SECTION

    ERASE A TRACK
    MIX TWO TRACKS
    PUNCH IN
    TRIGGER -- OFF

ENTER COMMAND, OR SPACE TO EXIT
```

ERASE

Normally a track is erased when you record over it. There are times, though, when you'll want to clear a track out without recording any new material.

To ERASE an unwanted track, press <E>. You'll be asked to either enter the number of the track to be ERASED or press the <SPACE BAR> to change your mind.

Following your selection you will be asked if you are sure you want to erase this track; you can type <Y> (Yes) or <N> (No). This is a safeguard, since Erasing a track destroys all data on that track.

MIX

One of the most exciting features of the KORG-800 is the MIX TRACKS option. Two recorded tracks can be merged into one track, mixing all the data of the two original tracks, and freeing up another track to record on. Then, after the new track is recorded, it too can be mixed with the original tracks, and more new tracks added!

Mixed tracks can be combined with other mixed tracks; the net result is like having dozens of sequencer tracks! The limiting factors are the number of voices the synthesizers in your MIDI system will support, and the total memory of the track.

To use the MIX function:
After recording two tracks and setting them both to PLAY mode press the <SPACEBAR> to exit the Format screen and <E> to get to the EDIT SCREEN. Then press <M>.

You will be asked for the SOURCE and TARGET tracks. SOURCE is the track that will "move in" with the TARGET track. After you have entered the track numbers, you're asked if you're sure you want to mix your tracks. MAKE SURE YOU HAVE A DATA DISK IN YOUR DISK DRIVE! To allow maximum sequencer capacity, the tracks are MIXed from the sequencer to the disk, and then reloaded from the disk when MIX is finished.

Assuming you have a data disk in the disk drive and you want to go ahead with the mix, press <Y>. When MIX finishes you will return to the Format screen, to find the TARGET track in PLAYBACK and the SOURCE track OFF.

MIX combines all the music and controller change data on the SOURCE track with the data on the TARGET track, and the "merged" tracks reside on the TARGET track. The SOURCE track becomes vacant.

If you start sequencer playback now (by pressing <SPACE BAR> twice) you'll find the TARGET track contains all the data from both tracks. The pitch bends and preset changes have also been combined.

Two last considerations about mix:

- If you are using different MIDI CHANNELs for your two tracks, remember that when you mix them, they'll both wind up on the MIDI CHANNEL of the TARGET track. One track cannot go to two different CHANNELs, but two (or more) synthesizers can be on the same CHANNEL, and on the same track.

- Once mixed, tracks cannot be "unmixed". We suggest saving the separate tracks (onto a "scrapbook" data disk) before mixing, just in case you want to "undo" the mix later. (See "DISK STORAGE", p.43)

"CONTROL TRACKS"

More than just keyboard information is recorded when you are laying down sequencer tracks -- the sequencer is also storing pitch bends, preset changes, and all controller changes.

This opens up the possibility of "control" tracks. You can lay down tracks in which you don't play anything on the keyboard at all, but just make controller changes. Then, by mixing the control track with a keyboard track, you get a finished sequence that sounds as if you'd played a spectacularly difficult keyboard part and made dozens of controller changes all at the same time.

PUNCH IN

During playback you may jump directly from playback to record while the sequencer is running, to insert new material.

From the Edit screen, select <P>. You'll be asked for the NUMBER of the TRACK you wish to punch into. Enter the NUMBER (1, 2, 3, or 4). If you change your mind, press <F7> to clear your entry.

After entering the TRACK NUMBER, press **<SPACE BAR>** to return to the Format screen. Note that an ★ appears alongside the number of the TRACK you've chosen to PUNCH IN to. This is your indicator that PUNCH IN is active. Leave the track in PLAYBACK MODE.

Now, press **<SPACE BAR>** to start the sequencer. When the track cycles through to the point at which you wish to begin inserting new material, press **<RETURN>** to switch into RECORD MODE and start playing; any material previously on the track is erased from the punch-in point to the end of the track.

Three considerations about punch in:

- Never PUNCH INTO a "blank" track! Attempting to punch into a track that has not previously been recorded on may cause total loss of all tracks currently in memory.

- After PUNCHING INTO a track you must play it through to the end. You cannot "punch out".

- Be careful to always punch into a silent spot! If you punch into the middle on a note already recorded on the track, the key-off data is erased; as far as the sequencer knows you're still holding the key down and it will sustain indefinitely.

TRIGGER

This function controls whether external MIDI sequencers (such as the Korg PS-800 or EX-800's built-in sequencers) connected to the KORG-800 MIDI OUT jack will start up in Sync with the KORG-800, or be separately triggered during the recording process. (See next item)

The status of this function is indicated by the "OFF/ON" legend next to TRIGGER. "OFF" means that the external sequencers will not start up when the KORG-800 is started. (They can be independently triggered at some later point.) "ON" means the external sequencer will start in perfect sync with the KORG-800 sequencer, will continue to play in sync, will change tempo in accord with KORG-800 TEMPO changes, and will stop playing when the KORG-800 sequencer is stopped.

To change the TRIGGER status, hit the <T> key. Pressing <T> again changes it back to the prior status.

EXTERNAL SEQUENCER CONTROL

The TRIGGER functions allow you to start and stop one or more external sequencers, drum machines, etc., provided they are incorporated into your setup via the KORG-800 Sequencer's MIDI OUT jack.

For example the Korg Poly-800 Synthesizer and EX-800 Expander Module have internal sequencers, which can be utilized as additional "mini-tracks" for repeated bass lines, riffs, and the like; saving your KORG-800 tracks for longer passages.

You can make the external sequencer start when the KORG-800 starts (Synchronous start, Trigger "ON"), or if the Trigger is "OFF", you can manually turn the external sequencer on and off while the KORG-800 sequence is running, as many times as you like. The choice is yours.

To use this function, you should first go to the EDIT SCREEN and set the TRIGGER function to "ON" (for synchronous start) or "OFF" (for manual start of external sequencers). (See TRIGGER, above).

If TRIGGER is "OFF", while you are RECORDING on the KORG-800 **<RETURN>** is used like an on/off switch to control the external sequencer. Press **<RETURN>** once to start the external sequencer; press it again to stop. You can start and stop the external sequencer as often as you want while recording. EVERY TIME YOU START OR STOP THE EXTERNAL SEQUENCER, IT IS RECORDED IN THE SEQUENCER TRACK!

During both RECORD and PLAYBACK, a flag ("S") to the right of the PRESET number is used to show the status of the external sequencer, and also to show which track is being used to trigger the external sequencer.

Remember, the External Sequencer START/STOP functions are overall functions. They cannot be assigned to a specific instrument or specific channel; rather, they affect the entire SYSTEM. ALL external sequencers (including MIDI drum machines) will start and stop at the same time(s).

So be careful not to overlap START/STOP commands from different tracks. Otherwise, you may find you're stopping and restarting an external sequence when you want it to be continuous.

Best procedure is to record external sequencer START and STOP commands on one track, and one track only.

(NOTE: The KORG-800's PAUSE function will not function properly with external sequencers, since they will not resume playback following the pause unless a new START command is issued.

TEMPO

TEMPO is a changeable, saveable, parameter. You can record awesome, tight, precise, sequences by setting TEMPO to a slow and comfortable pace when keying the parts in, and then resetting it to Molto Prestissimo before playback. Current TEMPO is saved when you save the sequence.

MULTIPLE KEYBOARDS

If you are running a multiple keyboard system, there are some things you need to keep in mind.

First and foremost, the synthesizer connected directly to the computer MIDI IN (see pg.7) is the recording keyboard. All the other keyboards in the system are playback-only.

Secondly, CHANNEL number is irrelevant during recording. All keyboard parts are initially recorded from the synthesizer connected directly to the computer. At the time of recording, it doesn't matter which instrument you wish to hear the music played back through or what CHANNEL the playback instrument is on. When the track is switched to PLAYBACK MODE, the instrument whose Input CHANNEL matches the track's Output CHANNEL will be the instrument that plays back the track(s).

Even if the recording instrument and the playback instrument are on different CHANNELS, it is not necessary to change CHANNEL between recording and playback.

Third, it is a good practice to record the tracks that are to play back through your playback-only instruments before recording the track to play back through the recording keyboard. The track that will be played back through the recording instrument should be the last track recorded. This helps minimize confusion and voice drop-out during overdub.

WORKING WITH DRUM MACHINES

Assuming your drum machine is capable of accepting external CLOCK and START/STOP signals (see pg.9), your KORG-800 Sequencer system is easily synchronized with your drum machine. The drum machine will start when the sequencer starts, and stop when the sequencer stops.

We've always found it's easier to program the drum machine first, and then enter your sequences while playing along with the drum machine, rather than trying to sync up the drum machine with sequences after they're recorded. However, unless your drum box is MIDI-equipped, don't change TEMPO while overdubbing or playing back keyboard parts. The sequencer and the drum machine will go out of sync.

When using the drum machine with LOOPED tracks, the KORG-800 sends a "RESET" signal to the drum machine at the end of the loop, to ensure that the machines stay synchronized.

While the MIDI standard is 24 clock pulses per quarter note, different non-MIDI drum machines use different clock speeds: Emu's Drumulator and Roland drum machines use 24 clocks/quarter note, Korg and Linn use 48, and Oberheim uses 96. This means the Roland and Drumulator will run at normal speed, the Korg or Linn at half speed, and the Oberheim at one-quarter speed with respect to the MIDI system. You must take these differences in tempo into account when programming your drum machine.

For proper operation with KORG non-MIDI drum machines, use the DRUM output from the Interface Cartridge and set the DRUMS clock rate to "48". (See pg.22)

As an example, at 24 beat/qtr.note the following beat pattern would be programmed into a Roland, Drumulator, or MIDI drum machine "as is":

Programmed into a Linn as:

Or programmed into an Oberheim as:

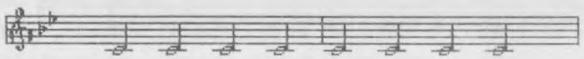
Drum Machine CLOCK Change

To allow easier programming of drum machines, the Drum Sync CLOCK Rate may be changed from 48 pulses per beat to 24 pulses per beat. This affects only the DRUM Sync jack, and does not affect Sequencer TEMPO or the MIDI clock signals.

To find out whether your sequencer is set for 24 or 48 pulse CLOCK Rate, look at the DRUM parameter on the Format screen. When the sequencer is set for a 24 pulse/beat CLOCK Rate, pressing **<RETURN>** switches DRUM to 48. When the sequencer is set for a 48 pulse/beat CLOCK Rate, pressing **<RETURN>** switches DRUM to 24.

When the Drum Sync CLOCK rate is set to 48, Korg and Linn drum machines will operate normally. Oberheim drum machines will operate at half speed. As an example, the following beat pattern would be programmed "as is" into a Korg:

Or programmed into an Oberheim as:



DISK STORAGE

Once you become comfortable with the sequencer, you'll start laying down tracks you want to save. Even if what you're playing isn't perfect, the synthesizer/sequencer combination makes a very handy system for trying out arrangements and new ideas, and saving your experiments. It's faster to use and easier to rearrange with than a tape recorder; it's like a sketch pad for music.

To save sequencer files you must have formatted data disks (see pg.6). The KORG-800 Program Disk is copy-protected so you cannot (nor should you want to) use the program disk for storing sequencer files.

To save a sequencer file:

From the Format screen, press <SPACE BAR> to go to the DISK/FORMAT/EDIT prompt line, and press <D> to go to the DISK sub-menu. The following prompts appear in the Command area:

```
DISK SECTION
CATALOG / LOAD / SAVE / DELETE
ENTER COMMAND, OR SPACE TO EXIT:
```

Press a letter key to select the disk function you desire, or the <SPACE BAR> to return to the DISK/FORMAT/MIX prompt. You must have a disk in the drive before selecting any of these functions. The four functions are:

<C>-- Display the CATALOG (contents) of the disk.

<L>-- LOAD a sequencer file. You're asked for the name of the file to be LOADed. Type it in and press <RETURN>.

<S>-- SAVE a sequencer file. You're asked for the name of the file to be SAVED. Think up a name, type it in, make sure your data storage disk is in the drive and NOT the program disk, and press <RETURN>.

If there's a file with the same name already on the data disk, you'll be prompted: FILE ALREADY EXISTS; REPLACE? Enter <Y> to write over the existing file. If you don't want to replace it, enter any other key. However, an unavoidable quirk of the Commodore disk drive is that if you chose not to replace the file, the DISK ERROR light begins blinking. Ignore it; it's harmless.

If you CATALOG the disk after saving a track, you'll see that sequencer tracks are saved with the filenames you give them and the file type " • M4" (e.g. ROCKTUNE•M4). The file type is automatically added by the program. Remember, type in only the filename (and press <RETURN>) when LOADING, SAVING, or DELETING files.

<D>-- DELETE a sequencer file. If you make a practice of saving every experimental track you lay down, and every set of tracks before a mix, you'll eventually find your data disks are full of alternate takes and other unwanted material. When you're certain you won't need a file anymore, you may DELETE it by selecting <D> from the disk submenu. You are asked for the name of the file to be DELETED.

Type in the file's name and press <RETURN>.

<SPACE> -- Exit Disk Sub-Menu and go to DISK/FORMAT/EDIT prompt.

NOTE: KORG-800 track files are fully compatible with files created by Passport Designs or Yamaha "MIDI/4" files (except that KORG-800 "SYNC External" and "External Sequencer Start/Stop" commands will have no effect on MIDI/4 programs).

APPENDIX: MIDI PROGRAMMING

The following information is included solely for the benefit of those interested in writing programs for their MIDI system. It is not necessary to know any of the following information in order to use all the features of the KORG-800 MIDI Sequencer Software.

For a thorough description of the MHOC-1 Interface Cartridge, programmers are advised to obtain Passport Designs' Type I MIDI Interface Technical Notes. Programmers are also advised to obtain the latest edition of the MIDI Specification, to ensure that the MIDI codes they're using are currently valid.

MHOC-1 MIDI INTERFACE HARDWARE

The MHOC-1 MIDI Interface Cartridge primarily consists of a Motorola MC6840 Programmable Timer Module, a Motorola MC6850 Asynchronous Communications Interface Adapter, and computer bus interfacing circuitry.

The following values are used to set up the 6840 PTM and the 6850 ACIA to function in various capacities, and to control their operation.

Values relevant to the 6850 are poked into the 6850 Control and Transmit Data Registers. Values relevant to the 6840 are poked into the 6840 Timer Control Registers.

Timer & ACIA must be reset before configuration.

	DECIMAL	HEX	BINARY	DESCRIPTION
6 P	0	00	0000 0000	Let timers run
8 T	1	01	0000 0001	Turn off timers
4 M	67	43	0100 0011	Reset the 6840 PTM
0				
6 A	17	11	0001 0001	No interrupts generated
8 C	19	13	0001 0011	Reset ACIA
5 I	21	15	0001 0101	Turn off ACIA
0 A	149	95	1001 0101	Generate interrupts during Receive only
	181	B5	1011 0100	Generate interrupts during both Send & Receive

The Commodore 64 version of the MHOC-1 Interface Cartridge uses the following hardware addresses:

DECIMAL	HEX	DESCRIPTION
56832	DE00	6840 Timer control register 1
56833	DE01	6840 Timer control register 2
56834	DE02	High Byte Timer 1 value
56835	DE03	Low Byte Timer 1 value
56836	DE04	High Byte Timer 2 value
56837	DE05	Low Byte Timer 2 value
56838	DE06	High Byte Timer 3 value (RESERVED)
56839	DE07	Low Byte Timer 3 value (RESERVED)
56840	DE08	6850 control register
56841	DE09	6850 data register
56880	DE30	Drum sync SET
56888	DE38	Drum sync CLEAR

Once the 6840 and 6850 have been set up for the desired mode of operation, normal transmission procedure is to poke a MIDI "STATUS" byte into the 6850 data register, wait briefly for the register to clear, then poke the appropriate MIDI "DATA" byte(s) into the 6850 data register, again waiting for the register to clear after each byte.

Reception of MIDI data is an interrupt-driven process. Given the ACIA has been set up properly, receipt of data by the ACIA generates an interrupt; the received byte will be found in the 6850 data register. As the MHOC-1 Interface Cartridge contains no buffers larger than 1 byte, the received byte must be read as soon as the interrupt is generated or the next byte received will write over it.

MIDI INFORMATION FORMAT

MIDI messages consist of from 1 to 3 bytes. The first byte is called the STATUS byte and is usually followed by one or more DATA bytes. All STATUS bytes are eight bit numbers with the most significant bit set (=1), therefore legal STATUS byte values range from 128 to 255 ($80 to $FF).

Channel-specific STATUS byte commands ($80 through $E0) use the 4 least significant bits to name the channel being addressed.

DATA bytes have the msb reset (=0), thus legal values range from 0 to 127 ($00 to $7F).

Common MIDI messages (status bytes and associated valid data bytes) are presented below.

Message	STATUS BYTE		Number of DATA bytes	Description
KEY OFF	128	$80	2	Key number (0 - 127) Velocity (0 - 127)
KEY ON	144	$90	2	Key number (0 - 127) Velocity (0 - 127)
POLYPHONIC KEY PRESSURE	160	$A0	2	Key number (0 - 127) Amount (0 - 127)
CONTROLLER CHANGE CHANGE	176	$B0	2	Contr. ID (0 - 121) (122 - 127 reserved) Amount (0 - 127)
PROGRAM CHANGE (PRESET)	192	$C0	1	Program identifier (0 - 127)
CHANNEL PRESSURE	208	$D0	1	Amount (0 - 127)
PITCH WHEEL	224	$E0	2	Pitch wheel change LSBYTE (0 - 127) MSBYTE (0 - 127) (CENTER = 64)
MIDI SYTEM TIMING CLOCK	248	$F8	0	Master synchronizing clock pulse sent at 24 clocks/qtr note.
START	250	$FA	0	Sent when SPACE key is pressed.
STOP	252	$FC	0	Sent @ sequence end.

KORG-800 QUICK REFERENCE GUIDE

Command		Page
	FORMAT SCREEN	
	• Cursor Commands •	
F7	Select track to work on.	17
F3	Move right; select Parameter to change.	17
F1	Move left; select Parameter to change.	17
	• Format Parameters •	
	Position cursor in area and enter new value.	
TR	Track number. Shown for reference.	18
MODE	O = Off. P = Playback. R = Record.	18
CH	MIDI Output Channel. (1 to 16)	18
PRE	Starting Preset for Sequencer Playback. (1.1 to 8.8)	19
INSTR	Identify synthesizer used. (12 letters, RETURN)	21
TEMPO	Record/Playback tempo. (32 to 159)	21
TRANS	Transposition. (+ or -) (1 to 12) half steps.	22
CLICK	O = Off. (1 to 9) = "Count off" before recording.	22
DRUMS	Drum machine sync. Return to toggle 24 or 48.	22
LOOP	Return to toggle ON/OFF.	23
SYNC	Return to toggle INTERNAL/EXTERNAL.	23
	• Exit from Format •	
SPACE	Exit to Sequencer and Disk/Edit/Format Menu.	25
	SEQUENCER SCREEN	
	• Record Mode •	
SPACE	Toggle sequencer start/stop.	26
	• Playback Mode •	
SPACE	Toggle sequencer start/stop.	27
+	Speed up playback tempo.	27
-	Slow down playback tempo.	27
RUN/STOP	Pause. Press any key to resume.	27
	DISK SCREEN	
C	Catalog disk.	43
L	Load file.	43
S	Save file.	44
D	Delete file.	44
	EDIT SCREEN	
E n	Erase Track number n.	33
M x y	Merge Track x into Track y.	34
P n	Prepare for punch-in record on Track n. Return to Playback mode, press RETURN to punch in.	36
T	Toggle External Device Trigger, ON/OFF.	37

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